



SEQUENCE LISTING

<110> Shattuck, Donna M.
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Abkevich, Victor
Hunt, Steven

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Pro 705	Phe	Gly	Pro	Pro	Pro 710	Glu	Glu	Lys	Lys	Arg 715	Thr	Ser	Arg	Glu	Leu 720
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Arg Leu Cys Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly
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Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
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Lys Pro Gln Arg Val His Lys Leu Ile His Asn Ser His Asp Pro Ser
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Tyr Phe Ala Cys Leu Ile Lys Glu Asp Ala Val His Trp Gln Ser Ile
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Cys Tyr Val Phe Lys Ala Asp Asp Gln Thr Lys Val Pro Glu Ile Ile
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Ser Ser Ile Arg Gln Ala Gly Lys Ile Ala Arg Gln Glu Glu Leu His
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Cys Pro Ser Glu Phe Asp Asp Thr Phe Ser Lys Lys Phe Glu Val Leu
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Phe Cys Gly Arg Val Thr Val Ala His Lys Lys Ala Pro Pro Ala Leu
 Page 27

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Asp Phe Ile Lys Ser Thr Leu Pro Asn Leu Gly Leu Val Gln Met
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Arg Leu Ser Arg Gln Ser Thr Arg Lys Glu Pro Val Thr Lys Gln Val
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Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
 Page 40

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Cys Pro Ser Glu Phe Asp Asp Thr Phe Ser Lys Lys Phe Glu Val Leu
Page 47

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 Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly Arg Ser Gln
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			20					25					30		

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Arg Ser Gln Gln Trp₈₅ Asp Pro Leu Ile Tyr₉₀ Ser Ser Ile Phe Glu₉₅ Cys
 Lys Pro Gln Arg₁₀₀ Val His Lys Leu Ile₁₀₅ His Asn Ser His Asp₁₁₀ Pro Ser
 Tyr Phe Ala₁₁₅ Cys Leu Ile Lys Glu₁₂₀ Asp Ala Val His Arg₁₂₅ Gln Ser Ile
 Cys Tyr₁₃₀ Val Phe Lys Ala Asp₁₃₅ Asp Gln Thr Lys Val₁₄₀ Pro Glu Ile Ile
 Ser Ser Ile Arg Gln Ala₁₅₀ Gly Lys Ile Ala Arg₁₅₅ Gln Glu Glu Leu His₁₆₀
 Cys Pro Ser Glu Phe₁₆₅ Asp Asp Thr Phe Ser₁₇₀ Lys Lys Phe Glu Val₁₇₅ Leu
 Phe Cys Gly Arg₁₈₀ Val Thr Val Ala His₁₈₅ Lys Lys Ala Pro Pro₁₉₀ Ala Leu
 Ile Asp Glu₁₉₅ Cys Ile Glu Lys Phe Asn His Val Ser Gly₂₀₅ Ser Arg Gly
 Ser Glu₂₁₀ Ser Pro Arg Pro Asn₂₁₅ Pro Pro His Ala Ala₂₂₀ Pro Thr Gly Ser
 Gln Glu Pro Val Arg Arg₂₃₀ Pro Met Arg Lys Ser₂₃₅ Phe Ser Gln Pro Gly₂₄₀
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 Ser Ser Gly Phe₂₆₀ Phe Ser Ser Phe Glu₂₆₅ Glu Ser Asp Ile Glu₂₇₀ Asn His
 Leu Ile Ser₂₇₅ Gly His Asn Ile Val₂₈₀ Gln Pro Thr Asp Ile₂₈₅ Glu Glu Asn
 Arg Thr Met Leu Phe Thr Ile₂₉₅ Gly Gln Ser Glu Val₃₀₀ Tyr Leu Ile Ser
 Pro Asp Thr Lys Lys Ile₃₁₀ Ala Leu Glu Lys Asn₃₁₅ Phe Lys Glu Ile Ser₃₂₀
 Phe Cys Ser Gln Gly₃₂₅ Ile Arg His Val Asp₃₃₀ His Phe Gly Phe Ile₃₃₅ Cys

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 370 375 380
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 385 390 395 400
 Arg Ile Glu Gly Met Asn Ser Ser Lys Thr Lys Leu Glu Leu Gln Lys
 405 410 415
 His Leu Thr Thr Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu
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 Val Gln Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile
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 Ile Ser Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile
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 465 470 475 480
 Gly Ser Glu Leu Pro Pro Ser Ala Thr Arg Phe Arg Leu Asp Met Leu
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 Gln Pro Ala Arg Gly Ser Pro Gly Val Ser Gln Arg Lys Leu Met Arg
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 Tyr His Ser Val Ser Thr Glu Thr Pro His Glu Arg Asn Ile Ser Tyr
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 Met Asn Thr Lys Arg Asp Phe Glu Ser Lys Ala Asn His Leu Gly Asp
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 690 695 700
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 740 745 750
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 755 760 765
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 785 790 795 800
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 Met His Ser Ala Val Gly Gln Gly Val Pro Arg His His Arg Gly Glu
 835 840 845

Ile Trp Lys Phe Leu Ala Glu Gln Phe His Leu Lys His Gln Phe Pro
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Val Glu Tyr His Val Leu Gln Glu Glu Leu Ile Asp Ser Ser Pro
 1100 1105 1110
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 1115 1120 1125
 Ser Leu Arg Lys Gln Asn Leu Asp Leu Leu Glu Gln Leu Gln Val
 1130 1135 1140
 Ala Asn Gly Arg Ile Gln Ser Leu Glu Ala Thr Ile Glu Lys Leu
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 Leu Ser Ser Glu Ser Lys Leu Lys Gln Ala Met Leu Thr Leu Glu
 1160 1165 1170
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 35 40 45
 Arg Leu Ser Arg Gln Ser Thr Arg Lys Glu Pro Val Thr Lys Gln Val
 50 55 60
 Arg Leu Cys Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly
 65 70 75 80
 Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
 85 90 95
 Lys Pro Gln Arg Val His Lys Leu Ile His Asn Ser His Asp Pro Ser
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<210> 36
 <211> 155
 <212> PRT
 <213> Homo sapiens

<400> 36

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Gln Glu Glu Leu His Cys Pro Ser Glu Phe Asp Asp Thr Phe Ser Lys
20 25 30

Lys Phe Glu Val Leu Phe Cys Gly Arg Val Thr Val Ala His Lys Lys
35 40 45

Ala Pro Pro Ala Leu Ile Asp Glu Cys Ile Glu Lys Phe Asn His Val
50 55 60

Ser Gly Ser Arg Gly Ser Glu Ser Pro Arg Pro Asn Pro Pro His Ala
65 70 75 80

Ala Pro Thr Gly Ser Gln Glu Pro Val Arg Arg Pro Met Arg Lys Ser
85 90 95

Phe Ser Gln Pro Gly Leu Arg Ser Leu Ala Phe Arg Lys Glu Leu Gln
100 105 110

Asp Gly Gly Leu Arg Ser Ser Gly Phe Phe Ser Ser Phe Glu Glu Ser
115 120 125

Asp Ile Glu Asn His Leu Ile Ser Gly His Asn Ile Val Gln Pro Thr
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Asp Ile Glu Glu Asn Arg Thr Met Leu Phe Thr
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<212> DNA

<213> Homo sapiens

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aattttaagg agatatcctt ttgctctcag 90

<210> 38

<211> 30

<212> PRT

<213> Homo sapiens

<400> 38

Ile Gly Gln Ser Glu Val Tyr Leu Ile Ser Pro Asp Thr Lys Lys Ile
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Ala Leu Glu Lys Asn Phe Lys Glu Ile Ser Phe Cys Ser Gln
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<212> DNA
<213> Homo sapiens

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<210> 40
<211> 35
<212> PRT
<213> Homo sapiens

<400> 40
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Gly Gly Gly Gly Phe His Phe Val Cys Tyr Val Phe Gln Cys Thr Asn
20 25 30

Glu Ala Leu
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gctaaggcgc cagcccagct gtgtgagggc tgccccctgc aaagcctgca caagctctgt 120
gagaggatag agg 133

<210> 42
<211> 44
<212> PRT
<213> Homo sapiens

<400> 42
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1 5 10 15

Val Gln Gln Thr Ala Lys Ala Pro Ala Gln Leu Cys Glu Gly Cys Pro
20 25 30

Leu Gln Ser Leu His Lys Leu Cys Glu Arg Ile Glu
Page 207

35

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 <212> DNA
 <213> Homo sapiens

<400> 43
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 aggagcaggc gactatTTTT gaagaggTtc ag 92

<210> 44
 <211> 30
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<400> 44

Met Asn Ser Ser Lys Thr Lys Leu Glu Leu Gln Lys His Leu Thr Thr
 1 5 10 15

Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu Val Gln
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 <212> DNA
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 ttatatgaag agaaacagaa agaacacatc catattgggg agatgaagca g 111

<210> 46
 <211> 37
 <212> PRT
 <213> Homo sapiens

<400> 46

Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile Ile Ser
 1 5 10 15

Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile His Ile
 20 25 30

Gly Glu Met Lys Gln
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 <212> DNA
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 ttgtcccgg 129

<210> 48
 <211> 43
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 <213> Homo sapiens

<400> 48

Thr Ser Gln Met Ala Ala Glu Asn Ile Gly Ser Glu Leu Pro Pro Ser
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Ala Thr Arg Phe Arg Leu Asp Met Leu Lys Asn Lys Ala Lys Arg Ser
 20 25 30

Leu Thr Glu Ser Leu Glu Ser Ile Leu Ser Arg
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 <212> DNA
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 tctagtacat taagtaacac cagcaaa 87

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 ctgtcgcccc agcaggcctt caggaggcga gcaaacaccc tgagtcactt ccccatcgaa 180

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 <211> 93
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<400> 52

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Phe Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser
 20 25 30

His Leu Pro Glu Glu Pro Ala Pro Leu Ser Pro Gln Gln Ala Phe Arg
 35 40 45

Arg Arg Ala Asn Thr Leu Ser His Phe Pro Ile Glu Cys Gln Glu Pro
 50 55 60

Pro Gln Pro Ala Arg Gly Ser Pro Gly Val Ser Gln Arg Lys Leu Met
 65 70 75 80

Arg Tyr His Ser Val Ser Thr Glu Thr Pro His Glu Arg
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 <212> DNA
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ctgtcgcccc agcaggcctt caggaggcga gcaaacaccc tgagtcactt ccccatcgaa 180

tgccaggaac ctccacaacc tgcccggggg tccccggggg tttcgcaaag gaaacttatg 240

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 <211> 80
 <212> PRT
 <213> Homo sapiens

<400> 54

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Phe Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser
 20 25 30

His Leu Pro Glu Glu Pro Ala Pro Leu Ser Pro Gln Gln Ala Phe Arg
 35 40 45

Arg Arg Ala Asn Thr Leu Ser His Phe Pro Ile Glu Cys Gln Glu Pro
 50 55 60

Pro Gln Pro Ala Arg Gly Ser Pro Gly Val Ser Gln Arg Lys Leu Met
 65 70 75 80

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 <211> 162
 <212> DNA
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 taattccagt ggagaacaaa gtgggaatgc tgtgccaaag ag 162

<210> 56
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 <212> PRT
 <213> Homo sapiens

<400> 56

Val Asp Pro Ser Pro Val Gly Glu Ser Lys His Arg Pro Gly Gln Ser
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Ser Ala Pro Ala Pro Pro Pro Arg Leu Asn Pro Ser Ala Ser Ser Pro
 20 25 30

Asn Phe Phe Lys Tyr Leu Lys His Asn Ser Ser Gly Glu Gln Ser Gly
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Asn Ala Val Pro Lys
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<210> 58
 <211> 39
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<400> 58

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 20 25 30

Ser Asp Phe Met Asn Thr Lys
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 ttcttccagc agatatgaag 140

<210> 60
 <211> 46
 <212> PRT
 <213> Homo sapiens

<400> 60

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Val Lys Thr Arg Arg His Ser Trp Arg Gln Gln Ile Phe Leu Arg Val
 20 25 30

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 35 40 45

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 <211> 39
 <212> DNA
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<210> 62
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<400> 62

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<210> 63

<211> 186

<212> DNA

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ggcaaaaggc tattcttcaa cagatactgc tgcttagaat ggagaaggaa aatcagaagc 180
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<210> 64

<211> 61

<212> PRT

<213> Homo sapiens

<400> 64

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Cys Glu Asp Gly Pro Phe Gly Pro Pro Pro Glu Glu Lys Lys Arg Thr
20 25 30

Ser Arg Glu Leu Arg Glu Leu Trp Gln Lys Ala Ile Leu Gln Gln Ile
35 40 45

Leu Leu Leu Arg Met Glu Lys Glu Asn Gln Lys Leu Gln
50 55 60

<210> 65

<211> 162

<212> DNA

<213> Homo sapiens

<400> 65

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<210> 66

<211> 53

<212> PRT

<213> Homo sapiens

<400> 66

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Ser Thr Pro Gly Arg Ser Lys Ile Lys Phe Asp Met Glu Lys Met His
35 40 45

Ser Ala Val Gly Gln
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<210> 67
<211> 159
<212> DNA
<213> Homo sapiens

<400> 67
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agctgacttc ccagcagcat gcgattctta ttgaccttg 159

<210> 68
<211> 52
<212> PRT
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<400> 68

Val Pro Arg His His Arg Gly Glu Ile Trp Lys Phe Leu Ala Glu Gln
1 5 10 15

Phe His Leu Lys His Gln Phe Pro Ser Lys Gln Gln Pro Lys Asp Val
20 25 30

Pro Tyr Lys Glu Leu Leu Lys Gln Leu Thr Ser Gln Gln His Ala Ile
35 40 45

Leu Ile Asp Leu
50

<210> 69
<211> 245
<212> DNA
<213> Homo sapiens

<400> 69
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tttacaacat tttgaaggcc tactcacttc tagaccagga agtgggatat tgccaaggtc 120
tcagctttgt agcaggcatt ttgcttcttc atatgagtga ggaagaggcg tttaaaatgc 180

tcaagtttct gatgtttgac atggggctgc ggaaacagta tcggccagac atgattattt 240
tacag 245

<210> 70
<211> 81
<212> PRT
<213> Homo sapiens

<400> 70

Arg Thr Phe Pro Thr His Pro Tyr Phe Ser Ala Gln Leu Gly Ala Gly
1 5 10 15

Gln Leu Ser Leu Tyr Asn Ile Leu Lys Ala Tyr Ser Leu Leu Asp Gln
20 25 30

Glu Val Gly Tyr Cys Gln Gly Leu Ser Phe Val Ala Gly Ile Leu Leu
35 40 45

Leu His Met Ser Glu Glu Glu Ala Phe Lys Met Leu Lys Phe Leu Met
50 55 60

Phe Asp Met Gly Leu Arg Lys Gln Tyr Arg Pro Asp Met Ile Ile Leu
65 70 75 80

Gln

<210> 71
<211> 160
<212> DNA
<213> Homo sapiens

<400> 71

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gcctcacagt tcccgtggg attcgtagcc agagtctttg 160

<210> 72
<211> 53
<212> PRT
<213> Homo sapiens

<400> 72

Ile Gln Met Tyr Gln Leu Ser Arg Leu Leu His Asp Tyr His Arg Asp
1 5 10 15

Leu Tyr Asn His Leu Glu Glu His Glu Ile Gly Pro Ser Leu Tyr Ala
20 25 30

Ala Pro Trp Phe Leu Thr Met Phe Ala Ser Gln Phe Pro Leu Gly Phe
35 40 45

Val Ala Arg Val Phe
50

<210> 73
<211> 170
<212> DNA
<213> Homo sapiens

<400> 73
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gccataagcc cttgattctg cagcatgaaa acctagaaac catagttgac ttataaaaaa 120
gcacgctacc caaccttggc ttggtacaga tggaaaagac catcaatcag 170

<210> 74
<211> 56
<212> PRT
<213> Homo sapiens

<400> 74

Met Ile Phe Leu Gln Gly Thr Glu Val Ile Phe Lys Val Ala Leu Ser
1 5 10 15

Leu Leu Gly Ser His Lys Pro Leu Ile Leu Gln His Glu Asn Leu Glu
20 25 30

Thr Ile Val Asp Phe Ile Lys Ser Thr Leu Pro Asn Leu Gly Leu Val
35 40 45

Gln Met Glu Lys Thr Ile Asn Gln
50 55

<210> 75
<211> 174
<212> DNA
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aaaaccaaca gcagcttacg caaacagaac cttgacctcc ttgaacagtt gcag 174

<210> 76
<211> 58
<212> PRT
<213> Homo sapiens

<400> 76

Val Phe Glu Met Asp Ile Ala Lys Gln Leu Gln Ala Tyr Glu Val Glu
1 5 10 15

Tyr His Val Leu Gln Glu Glu Leu Ile Asp Ser Ser Pro Leu Ser Asp
20 25 30

Asn Gln Arg Met Asp Lys Leu Glu Lys Thr Asn Ser Ser Leu Arg Lys
35 40 45

Gln Asn Leu Asp Leu Leu Glu Gln Leu Gln
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<210> 77
<211> 485
<212> DNA
<213> Homo sapiens

<400> 77
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tcagggggca tgtcccagtg ttttttttgt tgtttttaga tactaaatcg tcccttctcc 420
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gtttt 485

<210> 78
<211> 66
<212> PRT
<213> Homo sapiens

<400> 78

Val Ala Asn Gly Arg Ile Gln Ser Leu Glu Ala Thr Ile Glu Lys Leu
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Leu Ser Ser Glu Ser Lys Leu Lys Gln Ala Met Leu Thr Leu Glu Leu
20 25 30

Glu Arg Ser Ala Leu Leu Gln Thr Val Glu Glu Leu Arg Arg Arg Ser
35 40 45

Ala Glu Pro Ser Asp Arg Glu Pro Glu Cys Thr Gln Pro Glu Pro Thr
50 55 60

Gly Asp
65

<210> 79
<211> 249
<212> DNA
<213> Homo sapiens

<400> 79
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ccccgcggcg ggaagagcgc agccagccgg gtgcatgga ctccccgcc gccagggcg 180
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gcggcacag 249

<210> 80
<211> 127
<212> DNA
<213> Homo sapiens

<400> 80
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gcactctgca ctgggccagt atggatctcc ccaaccacat ttgacagtct tcatcctgcc 120
ataccag 127

<210> 81
<211> 3546
<212> DNA
<213> Homo sapiens

<400> 81
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ccctgggttg tggtgaggt gcgaagactc agcaggcagt ccaccagaaa ggaacctgta 180
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<210> 82
 <211> 1181
 <212> PRT
 <213> Homo sapiens

<400> 82

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Val Ser Val Asp Phe Gly Leu Gln Leu Val Gly Ser Leu Pro Val His
 20 25 30

Ser Leu Thr Thr Met Pro Met Leu Pro Trp Val Val Ala Glu Val Arg
 35 40 45

Arg Leu Ser Arg Gln Ser Thr Arg Lys Glu Pro Val Thr Lys Gln Val
 50 55 60

Arg Leu Cys Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly
 65 70 75 80

Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
 85 90 95

Lys Pro Gln Arg Val His Lys Leu Ile His Asn Ser His Asp Pro Ser
 100 105 110
 Tyr Phe Ala Cys Leu Ile Lys Glu Asp Ala Val His Arg Gln Ser Ile
 115 120 125
 Cys Tyr Val Phe Lys Ala Asp Asp Gln Thr Lys Val Pro Glu Ile Ile
 130 135 140
 Ser Ser Ile Arg Gln Ala Gly Lys Ile Ala Arg Gln Glu Glu Leu His
 145 150 155 160
 Cys Pro Ser Glu Phe Asp Asp Thr Phe Ser Lys Lys Phe Glu Val Leu
 165 170 175
 Phe Cys Gly Arg Val Thr Val Ala His Lys Lys Ala Pro Pro Ala Leu
 180 185 190
 Ile Asp Glu Cys Ile Glu Lys Phe Asn His Val Ser Gly Ser Arg Gly
 195 200 205
 Ser Glu Ser Pro Arg Pro Asn Pro Pro His Ala Ala Pro Thr Gly Ser
 210 215 220
 Gln Glu Pro Val Arg Arg Pro Met Arg Lys Ser Phe Ser Gln Pro Gly
 225 230 235 240
 Leu Arg Ser Leu Ala Phe Arg Lys Glu Leu Gln Asp Gly Gly Leu Arg
 245 250 255
 Ser Ser Gly Phe Phe Ser Ser Phe Glu Glu Ser Asp Ile Glu Asn His
 260 265 270
 Leu Ile Ser Gly His Asn Ile Val Gln Pro Thr Asp Ile Glu Glu Asn
 275 280 285
 Arg Thr Met Leu Phe Thr Ile Gly Gln Ser Glu Val Tyr Leu Ile Ser
 290 295 300
 Pro Asp Thr Lys Lys Ile Ala Leu Glu Lys Asn Phe Lys Glu Ile Ser
 305 310 315 320
 Phe Cys Ser Gln Gly Ile Arg His Val Asp His Phe Gly Phe Ile Cys
 325 330 335
 Arg Glu Ser Ser Gly Gly Gly Gly Phe His Phe Val Cys Tyr Val Phe
 340 345 350

Gln Cys Thr Asn Glu Ala Leu Val Asp Glu Ile Met Met Thr Leu Lys
 355 360 365
 Gln Ala Phe Thr Val Ala Ala Val Gln Gln Thr Ala Lys Ala Pro Ala
 370 375 380
 Gln Leu Cys Glu Gly Cys Pro Leu Gln Ser Leu His Lys Leu Cys Glu
 385 390 395 400
 Arg Ile Glu Gly Met Asn Ser Ser Lys Thr Lys Leu Glu Leu Gln Lys
 405 410 415
 His Leu Thr Thr Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu
 420 425 430
 Val Gln Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile
 435 440 445
 Ile Ser Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile
 450 455 460
 His Ile Gly Glu Met Lys Gln Thr Ser Gln Met Ala Ala Glu Asn Ile
 465 470 475 480
 Gly Ser Glu Leu Pro Pro Ser Ala Thr Arg Phe Arg Leu Asp Met Leu
 485 490 495
 Lys Asn Lys Ala Lys Arg Ser Leu Thr Glu Ser Leu Glu Ser Ile Leu
 500 505 510
 Ser Arg Gly Asn Lys Ala Arg Gly Leu Gln Glu His Ser Ile Ser Val
 515 520 525
 Asp Leu Asp Ser Ser Leu Ser Ser Thr Leu Ser Asn Thr Ser Lys Glu
 530 535 540
 Pro Ser Val Cys Glu Lys Glu Ala Leu Pro Ile Ser Glu Ser Ser Phe
 545 550 555 560
 Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser His
 565 570 575
 Leu Pro Glu Glu Pro Ala Pro Leu Ser Pro Gln Gln Ala Phe Arg Arg
 580 585 590
 Arg Ala Asn Thr Leu Ser His Phe Pro Ile Glu Cys Gln Glu Pro Pro
 595 600 605

Gln Pro Ala Arg Gly Ser Pro Gly Val Ser Gln Arg Lys Leu Met Arg
 610 615 620
 Tyr His Ser Val Ser Thr Glu Thr Pro His Glu Arg Lys Asp Phe Glu
 625 630 635 640
 Ser Lys Ala Asn His Leu Gly Asp Ser Gly Gly Thr Pro Val Lys Thr
 645 650 655
 Arg Arg His Ser Trp Arg Gln Gln Ile Phe Leu Arg Val Ala Thr Pro
 660 665 670
 Gln Lys Ala Cys Asp Ser Ser Ser Arg Tyr Glu Glu Pro His Cys Gly
 675 680 685
 Ser Pro Ser Leu Ala Cys Thr Glu Asp Tyr Ser Glu Leu Gly Glu Leu
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 Pro Pro Arg Ser Pro Leu Glu Pro Val Cys Glu Asp Gly Pro Phe Gly
 705 710 715 720
 Pro Pro Pro Glu Glu Lys Lys Arg Thr Ser Arg Glu Leu Arg Glu Leu
 725 730 735
 Trp Gln Lys Ala Ile Leu Gln Gln Ile Leu Leu Leu Arg Met Glu Lys
 740 745 750
 Glu Asn Gln Lys Leu Gln Ala Ser Glu Asn Asp Leu Leu Asn Lys Arg
 755 760 765
 Leu Lys Leu Asp Tyr Glu Glu Ile Thr Pro Cys Leu Lys Glu Val Thr
 770 775 780
 Thr Val Trp Glu Lys Met Leu Ser Thr Pro Gly Arg Ser Lys Ile Lys
 785 790 795 800
 Phe Asp Met Glu Lys Met His Ser Ala Val Gly Gln Gly Val Pro Arg
 805 810 815
 His His Arg Gly Glu Ile Trp Lys Phe Leu Ala Glu Gln Phe His Leu
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 Lys His Gln Phe Pro Ser Lys Gln Gln Pro Lys Asp Val Pro Tyr Lys
 835 840 845
 Glu Leu Leu Lys Gln Leu Thr Ser Gln Gln His Ala Ile Leu Ile Asp
 850 855 860

Leu Gly Arg Thr Phe Pro Thr His Pro Tyr Phe Ser Ala Gln Leu Gly
 865 870 875 880
 Ala Gly Gln Leu Ser Leu Tyr Asn Ile Leu Lys Ala Tyr Ser Leu Leu
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 900 905 910
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 930 935 940
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 945 950 955 960
 His Arg Asp Leu Tyr Asn His Leu Glu Glu His Glu Ile Gly Pro Ser
 965 970 975
 Leu Tyr Ala Ala Pro Trp Phe Leu Thr Met Phe Ala Ser Gln Phe Pro
 980 985 990
 Leu Gly Phe Val Ala Arg Val Phe Asp Met Ile Phe Leu Gln Gly Thr
 995 1000 1005
 Glu Val Ile Phe Lys Val Ala Leu Ser Leu Leu Gly Ser His Lys
 1010 1015 1020
 Pro Leu Ile Leu Gln His Glu Asn Leu Glu Thr Ile Val Asp Phe
 1025 1030 1035
 Ile Lys Ser Thr Leu Pro Asn Leu Gly Leu Val Gln Met Glu Lys
 1040 1045 1050
 Thr Ile Asn Gln Val Phe Glu Met Asp Ile Ala Lys Gln Leu Gln
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 Ala Tyr Glu Val Glu Tyr His Val Leu Gln Glu Glu Leu Ile Asp
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 Ser Ser Pro Leu Ser Asp Asn Gln Arg Met Asp Lys Leu Glu Lys
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 Thr Asn Ser Ser Leu Arg Lys Gln Asn Leu Asp Leu Leu Glu Gln
 1100 1105 1110

Leu Gln Val Ala Asn Gly Arg Ile Gln Ser Leu Glu Ala Thr Ile
 1115 1120 1125

Glu Lys Leu Leu Ser Ser Glu Ser Lys Leu Lys Gln Ala Met Leu
 1130 1135 1140

Thr Leu Glu Leu Glu Arg Ser Ala Leu Leu Gln Thr Val Glu Glu
 1145 1150 1155

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 1160 1165 1170

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 <211> 3828
 <212> DNA
 <213> Homo sapiens

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Tyr Phe Ala Cys Leu Ile Lys Glu Asp Ala Val His Arg Gln Ser Ile
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Lys	Leu	Leu	Gly	Ser	Ser	Glu	Asp	Leu	Ser	Ser	Asp	Ser	Glu	Ser	His	

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His Val Leu Gln Glu Glu Leu Ile Asp Ser Ser Pro Leu Ser Asp	1130	1135	1140	
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Lys Gln Asn Leu Asp Leu Leu Glu Gln Leu Gln Val Ala Asn Gly	1160	1165	1170	
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<400> 90

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			20					25					30		

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 Arg Leu Ser Arg Gln Ser Thr Arg Lys Glu Pro Val Thr Lys Gln Val
 50 55 60
 Arg Leu Cys Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly
 65 70 75 80
 Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
 85 90 95
 Lys Pro Gln Arg Val His Lys Leu Ile His Asn Ser His Asp Pro Ser
 100 105 110
 Tyr Phe Ala Cys Leu Ile Lys Glu Asp Ala Val His Arg Gln Ser Ile
 115 120 125
 Cys Tyr Val Phe Lys Ala Asp Asp Gln Thr Lys Val Pro Glu Ile Ile
 130 135 140
 Ser Ser Ile Arg Gln Ala Gly Lys Ile Ala Arg Gln Glu Glu Leu His
 145 150 155 160
 Cys Pro Ser Glu Phe Asp Asp Thr Phe Ser Lys Lys Phe Glu Val Leu
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 Phe Cys Gly Arg Val Thr Val Ala His Lys Lys Ala Pro Pro Ala Leu
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 Ile Asp Glu Cys Ile Glu Lys Phe Asn His Val Ser Gly Ser Arg Gly
 195 200 205
 Ser Glu Ser Pro Arg Pro Asn Pro Pro His Ala Ala Pro Thr Gly Ser
 210 215 220
 Gln Glu Pro Val Arg Arg Pro Met Arg Lys Ser Phe Ser Gln Pro Gly
 225 230 235 240
 Leu Arg Ser Leu Ala Phe Arg Lys Glu Leu Gln Asp Gly Gly Leu Arg
 245 250 255
 Ser Ser Gly Phe Phe Ser Ser Phe Glu Glu Ser Asp Ile Glu Asn His
 260 265 270
 Leu Ile Ser Gly His Asn Ile Val Gln Pro Thr Asp Ile Glu Glu Asn
 275 280 285

Arg Thr Met Leu Phe Thr Ile Gly Gln Ser Glu Val Tyr Leu Ile Ser
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 Pro Asp Thr Lys Lys Ile Ala Leu Glu Lys Asn Phe Lys Glu Ile Ser
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 Phe Cys Ser Gln Gly Ile Arg His Val Asp His Phe Gly Phe Ile Cys
 325 330 335
 Arg Glu Ser Ser Gly Gly Gly Gly Phe His Phe Val Cys Tyr Val Phe
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 Gln Cys Thr Asn Glu Ala Leu Val Asp Glu Ile Met Met Thr Leu Lys
 355 360 365
 Gln Ala Phe Thr Val Ala Ala Val Gln Gln Thr Ala Lys Ala Pro Ala
 370 375 380
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 385 390 395 400
 Arg Ile Glu Gly Met Asn Ser Ser Lys Thr Lys Leu Glu Leu Gln Lys
 405 410 415
 His Leu Thr Thr Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu
 420 425 430
 Val Gln Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile
 435 440 445
 Ile Ser Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile
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 His Ile Gly Glu Met Lys Gln Thr Ser Gln Met Ala Ala Glu Asn Ile
 465 470 475 480
 Gly Ser Glu Leu Pro Pro Ser Ala Thr Arg Phe Arg Leu Asp Met Leu
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 Lys Asn Lys Ala Lys Arg Ser Leu Thr Glu Ser Leu Glu Ser Ile Leu
 500 505 510
 Ser Arg Gly Asn Lys Ala Arg Gly Leu Gln Glu His Ser Ile Ser Val
 515 520 525
 Asp Leu Asp Ser Ser Leu Ser Ser Thr Leu Ser Asn Thr Ser Lys Glu
 530 535 540

Pro Ser Val Cys Glu Lys Glu Ala Leu Pro Ile Ser Glu Ser Ser Phe
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 Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser His
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 580 585 590
 Arg Ala Asn Thr Leu Ser His Phe Pro Ile Glu Cys Gln Glu Pro Pro
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 Tyr His Ser Val Ser Thr Glu Thr Pro His Glu Arg Asn Val Asp Pro
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 Lys Tyr Leu Lys His Asn Ser Ser Gly Glu Gln Ser Gly Asn Ala Val
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 Pro Lys Arg Asp Phe Glu Ser Lys Ala Asn His Leu Gly Asp Ser Gly
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 Gly Thr Pro Val Lys Thr Arg Arg His Ser Trp Arg Gln Gln Ile Phe
 705 710 715 720
 Leu Arg Val Ala Thr Pro Gln Lys Ala Cys Asp Ser Ser Ser Arg Tyr
 725 730 735
 Glu Asp Tyr Ser Glu Leu Gly Glu Leu Pro Pro Arg Ser Pro Leu Glu
 740 745 750
 Pro Val Cys Glu Asp Gly Pro Phe Gly Pro Pro Pro Glu Glu Lys Lys
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 Arg Thr Ser Arg Glu Leu Arg Glu Leu Trp Gln Lys Ala Ile Leu Gln
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 Gln Ile Leu Leu Leu Arg Met Glu Lys Glu Asn Gln Lys Leu Gln Ala
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Ser Glu Asn Asp Leu Leu Asn Lys Arg Leu Lys Leu Asp Tyr Glu Glu
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 Ile Thr Pro Cys Leu Lys Glu Val Thr Thr Val Trp Glu Lys Met Leu
 820 825 830
 Ser Thr Pro Gly Arg Ser Lys Ile Lys Phe Asp Met Glu Lys Met His
 835 840 845
 Ser Ala Val Gly Gln Gly Val Pro Arg His His Arg Gly Glu Ile Trp
 850 855 860
 Lys Phe Leu Ala Glu Gln Phe His Leu Lys His Gln Phe Pro Ser Lys
 865 870 875 880
 Gln Gln Pro Lys Asp Val Pro Tyr Lys Glu Leu Leu Lys Gln Leu Thr
 885 890 895
 Ser Gln Gln His Ala Ile Leu Ile Asp Leu Gly Arg Thr Phe Pro Thr
 900 905 910
 His Pro Tyr Phe Ser Ala Gln Leu Gly Ala Gly Gln Leu Ser Leu Tyr
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 Asn Ile Leu Lys Ala Tyr Ser Leu Leu Asp Gln Glu Val Gly Tyr Cys
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 Glu Glu Ala Phe Lys Met Leu Lys Phe Leu Met Phe Asp Met Gly Leu
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 Arg Lys Gln Tyr Arg Pro Asp Met Ile Ile Leu Gln Ile Gln Met Tyr
 980 985 990
 Gln Leu Ser Arg Leu Leu His Asp Tyr His Arg Asp Leu Tyr Asn His
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 Leu Glu Glu His Glu Ile Gly Pro Ser Leu Tyr Ala Ala Pro Trp
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 Phe Leu Thr Met Phe Ala Ser Gln Phe Pro Leu Gly Phe Val Ala
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 Arg Val Phe Asp Met Ile Phe Leu Gln Gly Thr Glu Val Ile Phe
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Lys Val Ala Leu Ser Leu Leu Gly Ser His Lys Pro Leu Ile Leu
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 Gln His Glu Asn Leu Glu Thr Ile Val Asp Phe Ile Lys Ser Thr
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 Leu Pro Asn Leu Gly Leu Val Gln Met Glu Lys Thr Ile Asn Gln
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 Val Phe Glu Met Asp Ile Ala Lys Gln Leu Gln Ala Tyr Glu Val
 1100 1105 1110
 Glu Tyr His Val Leu Gln Glu Glu Leu Ile Asp Ser Ser Pro Leu
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 Ser Asp Asn Gln Arg Met Asp Lys Leu Glu Lys Thr Asn Ser Ser
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 <212> PRT
 <213> Homo sapiens

<400> 92

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			20					25					30		

Ser	Leu	Thr	Thr	Met	Pro	Met	Leu	Pro	Trp	Val	Val	Ala	Glu	Val	Arg
		35					40					45			

Arg	Leu	Ser	Arg	Gln	Ser	Thr	Arg	Lys	Glu	Pro	Val	Thr	Lys	Gln	Val
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Arg	Ser	Gln	Gln	Trp 85	Asp	Pro	Leu	Ile	Tyr 90	Ser	Ser	Ile	Phe	Glu 95	Cys					
Lys	Pro	Gln	Arg 100	Val	His	Lys	Leu	Ile 105	His	Asn	Ser	His	Asp 110	Pro	Ser					
Tyr	Phe	Ala 115	Cys	Leu	Ile	Lys	Glu 120	Asp	Ala	Val	His	Arg 125	Gln	Ser	Ile					
Cys	Tyr 130	Val	Phe	Lys	Ala	Asp 135	Asp	Gln	Thr	Lys	Val 140	Pro	Glu	Ile	Ile					
Ser 145	Ser	Ile	Arg	Gln	Ala 150	Gly	Lys	Ile	Ala	Arg 155	Gln	Glu	Glu	Leu	His 160					
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Gln 225	Glu	Pro	Val	Arg	Arg 230	Pro	Met	Arg	Lys	Ser 235	Phe	Ser	Gln	Pro	Gly 240					
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Ser	Ser	Gly	Phe 260	Phe	Ser	Ser	Phe	Glu 265	Glu	Ser	Asp	Ile	Glu 270	Asn	His					
Leu	Ile	Ser 275	Gly	His	Asn	Ile	Val 280	Gln	Pro	Thr	Asp	Ile 285	Glu	Glu	Asn					
Arg	Thr 290	Met	Leu	Phe	Thr	Ile 295	Gly	Gln	Ser	Glu	Val 300	Tyr	Leu	Ile	Ser					
Pro	Asp	Thr	Lys	Lys	Ile	Ala	Leu	Glu	Lys	Asn	Phe	Lys	Glu	Ile	Ser					

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		325		330		335
Arg Glu Ser Ser Gly Gly Gly Gly Phe His Phe Val Cys Tyr Val Phe						
		340		345		350
Gln Cys Thr Asn Glu Ala Leu Val Asp Glu Ile Met Met Thr Leu Lys						
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Gln Ala Phe Thr Val Ala Ala Val Gln Gln Thr Ala Lys Ala Pro Ala						
		370		375		380
Gln Leu Cys Glu Gly Cys Pro Leu Gln Ser Leu His Lys Leu Cys Glu						
		385		390		395
Arg Ile Glu Gly Met Asn Ser Ser Lys Thr Lys Leu Glu Leu Gln Lys						
		405		410		415
His Leu Thr Thr Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu						
		420		425		430
Val Gln Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile						
		435		440		445
Ile Ser Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile						
		450		455		460
His Ile Gly Glu Met Lys Gln Thr Ser Gln Met Ala Ala Glu Asn Ile						
		465		470		475
Gly Ser Glu Leu Pro Pro Ser Ala Thr Arg Phe Arg Leu Asp Met Leu						
		485		490		495
Lys Asn Lys Ala Lys Arg Ser Leu Thr Glu Ser Leu Glu Ser Ile Leu						
		500		505		510
Ser Arg Gly Asn Lys Ala Arg Gly Leu Gln Glu His Ser Ile Ser Val						
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Asp Leu Asp Ser Ser Leu Ser Ser Thr Leu Ser Asn Thr Ser Lys Glu						
		530		535		540
Pro Ser Val Cys Glu Lys Glu Ala Leu Pro Ile Ser Glu Ser Ser Phe						
		545		550		555
Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser His						

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 aaccttgacc tccttgaaca gttgcaggtg gcaaattgta ggatccaaag ccttgaggcc 3420
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<400> 96

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 35 40 45

Arg Leu Ser Arg Gln Ser Thr Arg Lys Glu Pro Val Thr Lys Gln Val
 50 55 60

Arg Leu Cys Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly
 65 70 75 80

Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
 85 90 95

Lys Pro Gln Arg Val His Lys Leu Ile His Asn Ser His Asp Pro Ser
 100 105 110
 Tyr Phe Ala Cys Leu Ile Lys Glu Asp Ala Val His Arg Gln Ser Ile
 115 120 125
 Cys Tyr Val Phe Lys Ala Asp Asp Gln Thr Lys Val Pro Glu Ile Ile
 130 135 140
 Ser Ser Ile Arg Gln Ala Gly Lys Ile Ala Arg Gln Glu Glu Leu His
 145 150 155 160
 Cys Pro Ser Glu Phe Asp Asp Thr Phe Ser Lys Lys Phe Glu Val Leu
 165 170 175
 Phe Cys Gly Arg Val Thr Val Ala His Lys Lys Ala Pro Pro Ala Leu
 180 185 190
 Ile Asp Glu Cys Ile Glu Lys Phe Asn His Val Ser Gly Ser Arg Gly
 195 200 205
 Ser Glu Ser Pro Arg Pro Asn Pro Pro His Ala Ala Pro Thr Gly Ser
 210 215 220
 Gln Glu Pro Val Arg Arg Pro Met Arg Lys Ser Phe Ser Gln Pro Gly
 225 230 235 240
 Leu Arg Ser Leu Ala Phe Arg Lys Glu Leu Gln Asp Gly Gly Leu Arg
 245 250 255
 Ser Ser Gly Phe Phe Ser Ser Phe Glu Glu Ser Asp Ile Glu Asn His
 260 265 270
 Leu Ile Ser Gly His Asn Ile Val Gln Pro Thr Asp Ile Glu Glu Asn
 275 280 285
 Arg Thr Met Leu Phe Thr Ile Gly Gln Ser Glu Val Tyr Leu Ile Ser
 290 295 300
 Pro Asp Thr Lys Lys Ile Ala Leu Glu Lys Asn Phe Lys Glu Ile Ser
 305 310 315 320
 Phe Cys Ser Gln Gly Ile Arg His Val Asp His Phe Gly Phe Ile Cys
 325 330 335
 Arg Glu Ser Ser Gly Gly Gly Gly Phe His Phe Val Cys Tyr Val Phe
 340 345 350

Gln Cys Thr Asn Glu Ala Leu Val Asp Glu Ile Met Met Thr Leu Lys
 355 360 365
 Gln Ala Phe Thr Val Ala Ala Val Gln Gln Thr Ala Lys Ala Pro Ala
 370 375 380
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 385 390 395 400
 Arg Ile Glu Gly Met Asn Ser Ser Lys Thr Lys Leu Glu Leu Gln Lys
 405 410 415
 His Leu Thr Thr Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu
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 Val Gln Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile
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 Ile Ser Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile
 450 455 460
 His Ile Gly Glu Met Lys Gln Thr Ser Gln Met Ala Ala Glu Asn Ile
 465 470 475 480
 Gly Ser Glu Leu Pro Pro Ser Ala Thr Arg Phe Arg Leu Asp Met Leu
 485 490 495
 Lys Asn Lys Ala Lys Arg Ser Leu Thr Glu Ser Leu Glu Ser Ile Leu
 500 505 510
 Ser Arg Gly Asn Lys Ala Arg Gly Leu Gln Glu His Ser Ile Ser Val
 515 520 525
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 530 535 540
 Pro Ser Val Cys Glu Lys Glu Ala Leu Pro Ile Ser Glu Ser Ser Phe
 545 550 555 560
 Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser His
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 580 585 590
 Arg Ala Asn Thr Leu Ser His Phe Pro Ile Glu Cys Gln Glu Pro Pro
 595 600 605

Gln Pro Ala Arg Gly Ser Pro Gly Val Ser Gln Arg Lys Leu Met Ser
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 625 630 635 640
 Val Pro Asn Phe Leu Lys Phe Leu Ala Pro Val Asp Glu Asn Asn Thr
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 Ser Asp Phe Met Asn Thr Lys Arg Asp Phe Glu Ser Lys Ala Asn His
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 675 680 685
 Arg Gln Gln Ile Phe Leu Arg Val Ala Thr Pro Gln Lys Ala Cys Asp
 690 695 700
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 725 730 735
 Pro Glu Glu Lys Lys Arg Thr Ser Arg Glu Leu Arg Glu Leu Trp Gln
 740 745 750
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 755 760 765
 Gln Lys Leu Gln Ala Ser Glu Asn Asp Leu Leu Asn Lys Arg Leu Lys
 770 775 780
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 785 790 795 800
 Trp Glu Lys Met Leu Ser Thr Pro Gly Arg Ser Lys Ile Lys Phe Asp
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 820 825 830
 Arg Gly Glu Ile Trp Lys Phe Leu Ala Glu Gln Phe His Leu Lys His
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 Gln Phe Pro Ser Lys Gln Gln Pro Lys Asp Val Pro Tyr Lys Glu Leu
 850 855 860

Leu Lys Gln Leu Thr Ser Gln Gln His Ala Ile Leu Ile Asp Leu Gly
 865 870 875 880
 Arg Thr Phe Pro Thr His Pro Tyr Phe Ser Ala Gln Leu Gly Ala Gly
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 Gln Leu Ser Leu Tyr Asn Ile Leu Lys Ala Tyr Ser Leu Leu Asp Gln
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 Glu Val Gly Tyr Cys Gln Gly Leu Ser Phe Val Ala Gly Ile Leu Leu
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 930 935 940
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 Gln Ile Gln Met Tyr Gln Leu Ser Arg Leu Leu His Asp Tyr His Arg
 965 970 975
 Asp Leu Tyr Asn His Leu Glu Glu His Glu Ile Gly Pro Ser Leu Tyr
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 Ala Ala Pro Trp Phe Leu Thr Met Phe Ala Ser Gln Phe Pro Leu Gly
 995 1000 1005
 Phe Val Ala Arg Val Phe Asp Met Ile Phe Leu Gln Gly Thr Glu
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 Val Ile Phe Lys Val Ala Leu Ser Leu Leu Gly Ser His Lys Pro
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 Lys Ser Thr Leu Pro Asn Leu Gly Leu Val Gln Met Glu Lys Thr
 1055 1060 1065
 Ile Asn Gln Val Phe Glu Met Asp Ile Ala Lys Gln Leu Gln Ala
 1070 1075 1080
 Tyr Glu Val Glu Tyr His Val Leu Gln Glu Glu Leu Ile Asp Ser
 1085 1090 1095
 Ser Pro Leu Ser Asp Asn Gln Arg Met Asp Lys Leu Glu Lys Thr
 1100 1105 1110

Asn Ser Ser Leu Arg Lys Gln Asn Leu Asp Leu Leu Glu Gln Leu
1115 1120 1125

Gln Val Ala Asn Gly Arg Ile Gln Ser Leu Glu Ala Thr Ile Glu
1130 1135 1140

Lys Leu Leu Ser Ser Glu Ser Lys Leu Lys Gln Ala Met Leu Thr
1145 1150 1155

Leu Glu Leu Glu Arg Ser Ala Leu Leu Gln Thr Val Glu Glu Leu
1160 1165 1170

Arg Arg Arg Ser Ala Glu Pro Ser Asp Arg Glu Pro Glu Cys Thr
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Gln Pro Glu Pro Thr Gly Asp
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<212> DNA
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 <212> PRT
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<400> 98

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35 40 45

Arg Leu Ser Arg Gln Ser Thr Arg Lys Glu Pro Val Thr Lys Gln Val
50 55 60

Arg Leu Cys Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly
65 70 75 80

Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
85 90 95

Lys Pro Gln Arg Val His Lys Leu Ile His Asn Ser His Asp Pro Ser
100 105 110

Tyr Phe Ala Cys Leu Ile Lys Glu Asp Ala Val His Arg Gln Ser Ile
115 120 125

Cys Tyr Val Phe Lys Ala Asp Asp Gln Thr Lys Val Pro Glu Ile Ile
130 135 140

Ser 145 Ser Ile Arg Gln 150 Ala Gly Lys Ile Ala Arg 155 Gln Glu Glu Leu His 160
 Cys Pro Ser Glu 165 Phe Asp Asp Thr Phe Ser 170 Lys Lys Phe Glu Val 175 Leu
 Phe Cys Gly Arg 180 Val Thr Val Ala His 185 Lys Lys Ala Pro 190 Pro Ala Leu
 Ile Asp Glu 195 Cys Ile Glu Lys Phe 200 Asn His Val Ser Gly 205 Ser Arg Gly
 Ser Glu 210 Ser Pro Arg Pro 215 Asn Pro Pro His Ala 220 Ala Pro Thr Gly Ser
 Gln Glu 225 Pro Val Arg Arg 230 Pro Met Arg Lys Ser 235 Phe Ser Gln Pro Gly 240
 Leu Arg Ser Leu 245 Ala Phe Arg Lys Glu Leu 250 Gln Asp Gly Gly Leu Arg 255
 Ser Ser Gly 260 Phe Phe Ser Ser Phe Glu 265 Glu Ser Asp Ile Glu 270 Asn His
 Leu Ile Ser 275 Gly His Asn Ile Val 280 Gln Pro Thr Asp Ile 285 Glu Glu Asn
 Arg Thr 290 Met Leu Phe Thr Ile 295 Gly Gln Ser Glu Val 300 Tyr Leu Ile Ser
 Pro Asp 305 Thr Lys Lys Ile 310 Ala Leu Glu Lys Asn 315 Phe Lys Glu Ile Ser 320
 Phe Cys Ser Gln 325 Gly Ile Arg His Val Asp 330 His Phe Gly Phe Ile 335 Cys
 Arg Glu Ser 340 Ser Gly Gly Gly Gly Phe 345 His Phe Val Cys Tyr 350 Val Phe
 Gln Cys 355 Thr Asn Glu Ala Leu Val 360 Asp Glu Ile Met Met 365 Thr Leu Lys
 Gln Ala 370 Phe Thr Val Ala 375 Ala Val Gln Gln Thr Ala 380 Lys Ala Pro Ala
 Gln Leu 385 Cys Glu Gly Cys 390 Pro Leu Gln Ser Leu 395 His Lys Leu Cys Glu 400

Arg Ile Glu Gly Met Asn Ser Ser Lys Thr Lys Leu Glu Leu Gln Lys
 405 410 415
 His Leu Thr Thr Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu
 420 425 430
 Val Gln Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile
 435 440 445
 Ile Ser Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile
 450 455 460
 His Ile Gly Glu Met Lys Gln Thr Ser Gln Met Ala Ala Glu Asn Ile
 465 470 475 480
 Gly Ser Glu Leu Pro Pro Ser Ala Thr Arg Phe Arg Leu Asp Met Leu
 485 490 495
 Lys Asn Lys Ala Lys Arg Ser Leu Thr Glu Ser Leu Glu Ser Ile Leu
 500 505 510
 Ser Arg Gly Asn Lys Ala Arg Gly Leu Gln Glu His Ser Ile Ser Val
 515 520 525
 Asp Leu Asp Ser Ser Leu Ser Ser Thr Leu Ser Asn Thr Ser Lys Glu
 530 535 540
 Pro Ser Val Cys Glu Lys Glu Ala Leu Pro Ile Ser Glu Ser Ser Phe
 545 550 555 560
 Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser His
 565 570 575
 Leu Pro Glu Glu Pro Ala Pro Leu Ser Pro Gln Gln Ala Phe Arg Arg
 580 585 590
 Arg Ala Asn Thr Leu Ser His Phe Pro Ile Glu Cys Gln Glu Pro Pro
 595 600 605
 Gln Pro Ala Arg Gly Ser Pro Gly Val Ser Gln Arg Lys Leu Met Arg
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 Asp Phe Glu Ser Lys Ala Asn His Leu Gly Asp Ser Gly Gly Thr Pro
 625 630 635 640
 Val Lys Thr Arg Arg His Ser Trp Arg Gln Gln Ile Phe Leu Arg Val
 645 650 655

Ala Thr Pro Gln Lys Ala Cys Asp Ser Ser Ser Arg Tyr Glu Glu Pro
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 His Cys Gly Ser Pro Ser Leu Ala Cys Thr Glu Asp Tyr Ser Glu Leu
 675 680 685
 Gly Glu Leu Pro Pro Arg Ser Pro Leu Glu Pro Val Cys Glu Asp Gly
 690 695 700
 Pro Phe Gly Pro Pro Pro Glu Glu Lys Lys Arg Thr Ser Arg Glu Leu
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 Met Glu Lys Glu Asn Gln Lys Leu Gln Ala Ser Glu Asn Asp Leu Leu
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 Glu Val Thr Thr Val Trp Glu Lys Met Leu Ser Thr Pro Gly Arg Ser
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 Lys Ile Lys Phe Asp Met Glu Lys Met His Ser Ala Val Gly Gln Gly
 785 790 795 800
 Val Pro Arg His His Arg Gly Glu Ile Trp Lys Phe Leu Ala Glu Gln
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 820 825 830
 Pro Tyr Lys Glu Leu Leu Lys Gln Leu Thr Ser Gln Gln His Ala Ile
 835 840 845
 Leu Ile Asp Leu Gly Arg Thr Phe Pro Thr His Pro Tyr Phe Ser Ala
 850 855 860
 Gln Leu Gly Ala Gly Gln Leu Ser Leu Tyr Asn Ile Leu Lys Ala Tyr
 865 870 875 880
 Ser Leu Leu Asp Gln Glu Val Gly Tyr Cys Gln Gly Leu Ser Phe Val
 885 890 895
 Ala Gly Ile Leu Leu Leu His Met Ser Glu Glu Glu Ala Phe Lys Met
 900 905 910

Leu Lys Phe Leu Met Phe Asp Met Gly Leu Arg Lys Gln Tyr Arg Pro
915 920 925

Asp Met Ile Ile Leu Gln Ile Gln Met Tyr Gln Leu Ser Arg Leu Leu
930 935 940

His Asp Tyr His Arg Asp Leu Tyr Asn His Leu Glu Glu His Glu Ile
945 950 955 960

Gly Pro Ser Leu Tyr Ala Ala Pro Trp Phe Leu Thr Met Phe Ala Ser
965 970 975

Gln Phe Pro Leu Gly Phe Val Ala Arg Val Phe Asp Met Ile Phe Leu
980 985 990

Gln Gly Thr Glu Val Ile Phe Lys Val Ala Leu Ser Leu Leu Gly Ser
995 1000 1005

His Lys Pro Leu Ile Leu Gln His Glu Asn Leu Glu Thr Ile Val
1010 1015 1020

Asp Phe Ile Lys Ser Thr Leu Pro Asn Leu Gly Leu Val Gln Met
1025 1030 1035

Glu Lys Thr Ile Asn Gln Val Phe Glu Met Asp Ile Ala Lys Gln
1040 1045 1050

Leu Gln Ala Tyr Glu Val Glu Tyr His Val Leu Gln Glu Glu Leu
1055 1060 1065

Ile Asp Ser Ser Pro Leu Ser Asp Asn Gln Arg Met Asp Lys Leu
1070 1075 1080

Glu Lys Thr Asn Ser Ser Leu Arg Lys Gln Asn Leu Asp Leu Leu
1085 1090 1095

Glu Gln Leu Gln Val Ala Asn Gly Arg Ile Gln Ser Leu Glu Ala
1100 1105 1110

Thr Ile Glu Lys Leu Leu Ser Ser Glu Ser Lys Leu Lys Gln Ala
1115 1120 1125

Met Leu Thr Leu Glu Leu Glu Arg Ser Ala Leu Leu Gln Thr Val
1130 1135 1140

Glu Glu Leu Arg Arg Arg Ser Ala Glu Pro Ser Asp Arg Glu Pro
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Glu Cys Thr Gln Pro Glu Pro Thr Gly Asp
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Arg Leu Cys Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly
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Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
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Lys Pro Gln Arg Val His Lys Leu Ile His Asn Ser His Asp Pro Ser
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Tyr Phe Ala Cys Leu Ile Lys Glu Asp Ala Val His Arg Gln Ser Ile
 115 120 125

Cys Tyr Val Phe Lys Ala Asp Asp Gln Thr Lys Val Pro Glu Ile Ile
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Cys Pro Ser Glu Phe Asp Asp Thr Phe Ser Lys Lys Phe Glu Val Leu
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Phe Cys Gly Arg Val Thr Val Ala His Lys Lys Ala Pro Pro Ala Leu

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 Ser Arg Gly Asn Lys Ala Arg Gly Leu Gln Glu His Ser Ile Ser Val
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Thr 865	Thr	Val	Trp	Glu	Lys 870	Met	Leu	Ser	Thr	Pro 875	Gly	Arg	Ser	Lys	Ile 880				
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Arg Leu Ser Arg Gln Ser Thr Arg Lys Glu Pro Val Thr Lys Gln Val
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Arg Leu Cys Val Ser Pro Ser Gly Leu Arg Cys Glu Pro Glu Pro Gly
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Arg Ser Gln Gln Trp Asp Pro Leu Ile Tyr Ser Ser Ile Phe Glu Cys
 85 90 95

Lys Pro Gln Arg Val His Lys Leu Ile His Asn Ser His Asp Pro Ser
 100 105 110

Tyr Phe Ala Cys Leu Ile Lys Glu Asp Ala Val His Arg Gln Ser Ile
 115 120 125

Cys Tyr Val Phe Lys Ala Asp Asp Gln Thr Lys Val Pro Glu Ile Ile
 130 135 140

Ser Ser Ile Arg Gln Ala Gly Lys Ile Ala Arg Gln Glu Glu Leu His

405

410

415

His Leu Thr Thr Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu
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Val Gln Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile
435 440 445

Ile Ser Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile
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His Ile Gly Glu Met Lys Gln Thr Ser Gln Met Ala Ala Glu Asn Ile
465 470 475 480

Gly Ser Glu Leu Pro Pro Ser Ala Thr Arg Phe Arg Leu Asp Met Leu
485 490 495

Lys Asn Lys Ala Lys Arg Ser Leu Thr Glu Ser Leu Glu Ser Ile Leu
500 505 510

Ser Arg Gly Asn Lys Ala Arg Gly Leu Gln Glu His Ser Ile Ser Val
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Asp Leu Asp Ser Ser Leu Ser Ser Thr Leu Ser Asn Thr Ser Lys Glu
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Pro Ser Val Cys Glu Lys Glu Ala Leu Pro Ile Ser Glu Ser Ser Phe
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Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser His
565 570 575

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580 585 590

Arg Ala Asn Thr Leu Ser His Phe Pro Ile Glu Cys Gln Glu Pro Pro
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Gln Pro Ala Arg Gly Ser Pro Gly Val Ser Gln Arg Lys Leu Met Ser
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Ile Ser Tyr Arg Asn Ala Leu Arg Lys Lys Leu His Ser Ser Ser Ser
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Val Pro Asn Phe Leu Lys Phe Leu Ala Pro Val Asp Glu Asn Asn Thr
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Ser Asp Phe Met Asn Thr Lys Arg Asp Phe Glu Ser Lys Ala Asn His
Page 292

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Page 294

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Cys Pro Ser Glu Phe Asp Asp Thr Phe Ser Lys Lys Phe Glu Val Leu
 165 170 175
 Phe Cys Gly Arg Val Thr Val Ala His Lys Lys Ala Pro Pro Ala Leu
 180 185 190
 Ile Asp Glu Cys Ile Glu Lys Phe Asn His Val Ser Gly Ser Arg Gly
 195 200 205
 Ser Glu Ser Pro Arg Pro Asn Pro Pro His Ala Ala Pro Thr Gly Ser
 210 215 220
 Gln Glu Pro Val Arg Arg Pro Met Arg Lys Ser Phe Ser Gln Pro Gly
 225 230 235 240
 Leu Arg Ser Leu Ala Phe Arg Lys Glu Leu Gln Asp Gly Gly Leu Arg
 245 250 255
 Ser Ser Gly Phe Phe Ser Ser Phe Glu Glu Ser Asp Ile Glu Asn His
 260 265 270
 Leu Ile Ser Gly His Asn Ile Val Gln Pro Thr Asp Ile Glu Glu Asn
 275 280 285
 Arg Thr Met Leu Phe Thr Ile Gly Gln Ser Glu Val Tyr Leu Ile Ser
 290 295 300
 Pro Asp Thr Lys Lys Ile Ala Leu Glu Lys Asn Phe Lys Glu Ile Ser
 305 310 315 320
 Phe Cys Ser Gln Gly Ile Arg His Val Asp His Phe Gly Phe Ile Cys
 325 330 335
 Arg Glu Ser Ser Gly Gly Gly Gly Phe His Phe Val Cys Tyr Val Phe
 340 345 350
 Gln Cys Thr Asn Glu Ala Leu Val Asp Glu Ile Met Met Thr Leu Lys
 355 360 365
 Gln Ala Phe Thr Val Ala Ala Val Gln Gln Thr Ala Lys Ala Pro Ala
 370 375 380
 Gln Leu Cys Glu Gly Cys Pro Leu Gln Ser Leu His Lys Leu Cys Glu
 385 390 395 400
 Arg Ile Glu Gly Met Asn Ser Ser Lys Thr Lys Leu Glu Leu Gln Lys
 405 410 415

His Leu Thr Thr Leu Thr Asn Gln Glu Gln Ala Thr Ile Phe Glu Glu
 420 425 430
 Val Gln Lys Leu Arg Pro Arg Asn Glu Gln Arg Glu Asn Glu Leu Ile
 435 440 445
 Ile Ser Phe Leu Arg Cys Leu Tyr Glu Glu Lys Gln Lys Glu His Ile
 450 455 460
 His Ile Gly Glu Met Lys Gln Thr Ser Gln Met Ala Ala Glu Asn Ile
 465 470 475 480
 Gly Ser Glu Leu Pro Pro Ser Ala Thr Arg Phe Arg Leu Asp Met Leu
 485 490 495
 Lys Asn Lys Ala Lys Arg Ser Leu Thr Glu Ser Leu Glu Ser Ile Leu
 500 505 510
 Ser Arg Gly Asn Lys Ala Arg Gly Leu Gln Glu His Ser Ile Ser Val
 515 520 525
 Asp Leu Asp Ser Ser Leu Ser Ser Thr Leu Ser Asn Thr Ser Lys Glu
 530 535 540
 Pro Ser Val Cys Glu Lys Glu Ala Leu Pro Ile Ser Glu Ser Ser Phe
 545 550 555 560
 Lys Leu Leu Gly Ser Ser Glu Asp Leu Ser Ser Asp Ser Glu Ser His
 565 570 575
 Leu Pro Glu Glu Pro Ala Pro Leu Ser Pro Gln Gln Ala Phe Arg Arg
 580 585 590
 Arg Ala Asn Thr Leu Ser His Phe Pro Ile Glu Cys Gln Glu Pro Pro
 595 600 605
 Gln Pro Ala Arg Gly Ser Pro Gly Val Ser Gln Arg Lys Leu Met Ser
 610 615 620
 Val Asp Pro Ser Pro Val Gly Glu Ser Lys His Arg Pro Gly Gln Ser
 625 630 635 640
 Ser Ala Pro Ala Pro Pro Pro Arg Leu Asn Pro Ser Ala Ser Ser Pro
 645 650 655
 Asn Phe Phe Lys Tyr Leu Lys His Asn Ser Ser Gly Glu Gln Ser Gly
 660 665 670

Asn Ala Val Pro Lys Arg Asp Phe Glu Ser Lys Ala Asn His Leu Gly
 675 680 685
 Asp Ser Gly Gly Thr Pro Val Lys Thr Arg Arg His Ser Trp Arg Gln
 690 695 700
 Gln Ile Phe Leu Arg Val Ala Thr Pro Gln Lys Ala Cys Asp Ser Ser
 705 710 715 720
 Ser Arg Tyr Glu Asp Tyr Ser Glu Leu Gly Glu Leu Pro Pro Arg Ser
 725 730 735
 Pro Leu Glu Pro Val Cys Glu Asp Gly Pro Phe Gly Pro Pro Pro Glu
 740 745 750
 Glu Lys Lys Arg Thr Ser Arg Glu Leu Arg Glu Leu Trp Gln Lys Ala
 755 760 765
 Ile Leu Gln Gln Ile Leu Leu Leu Arg Met Glu Lys Glu Asn Gln Lys
 770 775 780
 Leu Gln Ala Ser Glu Asn Asp Leu Leu Asn Lys Arg Leu Lys Leu Asp
 785 790 795 800
 Tyr Glu Glu Ile Thr Pro Cys Leu Lys Glu Val Thr Thr Val Trp Glu
 805 810 815
 Lys Met Leu Ser Thr Pro Gly Arg Ser Lys Ile Lys Phe Asp Met Glu
 820 825 830
 Lys Met His Ser Ala Val Gly Gln Gly Val Pro Arg His His Arg Gly
 835 840 845
 Glu Ile Trp Lys Phe Leu Ala Glu Gln Phe His Leu Lys His Gln Phe
 850 855 860
 Pro Ser Lys Gln Gln Pro Lys Asp Val Pro Tyr Lys Glu Leu Leu Lys
 865 870 875 880
 Gln Leu Thr Ser Gln Gln His Ala Ile Leu Ile Asp Leu Gly Arg Thr
 885 890 895
 Phe Pro Thr His Pro Tyr Phe Ser Ala Gln Leu Gly Ala Gly Gln Leu
 900 905 910
 Ser Leu Tyr Asn Ile Leu Lys Ala Tyr Ser Leu Leu Asp Gln Glu Val
 915 920 925

Gly Tyr Cys Gln Gly Leu Ser Phe Val Ala Gly Ile Leu Leu Leu His
 930 935 940
 Met Ser Glu Glu Glu Ala Phe Lys Met Leu Lys Phe Leu Met Phe Asp
 945 950 955 960
 Met Gly Leu Arg Lys Gln Tyr Arg Pro Asp Met Ile Ile Leu Gln Ile
 965 970 975
 Gln Met Tyr Gln Leu Ser Arg Leu Leu His Asp Tyr His Arg Asp Leu
 980 985 990
 Tyr Asn His Leu Glu Glu His Glu Ile Gly Pro Ser Leu Tyr Ala Ala
 995 1000 1005
 Pro Trp Phe Leu Thr Met Phe Ala Ser Gln Phe Pro Leu Gly Phe
 1010 1015 1020
 Val Ala Arg Val Phe Asp Met Ile Phe Leu Gln Gly Thr Glu Val
 1025 1030 1035
 Ile Phe Lys Val Ala Leu Ser Leu Leu Gly Ser His Lys Pro Leu
 1040 1045 1050
 Ile Leu Gln His Glu Asn Leu Glu Thr Ile Val Asp Phe Ile Lys
 1055 1060 1065
 Ser Thr Leu Pro Asn Leu Gly Leu Val Gln Met Glu Lys Thr Ile
 1070 1075 1080
 Asn Gln Val Phe Glu Met Asp Ile Ala Lys Gln Leu Gln Ala Tyr
 1085 1090 1095
 Glu Val Glu Tyr His Val Leu Gln Glu Glu Leu Ile Asp Ser Ser
 1100 1105 1110
 Pro Leu Ser Asp Asn Gln Arg Met Asp Lys Leu Glu Lys Thr Asn
 1115 1120 1125
 Ser Ser Leu Arg Lys Gln Asn Leu Asp Leu Leu Glu Gln Leu Gln
 1130 1135 1140
 Val Ala Asn Gly Arg Ile Gln Ser Leu Glu Ala Thr Ile Glu Lys
 1145 1150 1155
 Leu Leu Ser Ser Glu Ser Lys Leu Lys Gln Ala Met Leu Thr Leu
 1160 1165 1170

Glu Leu Glu Arg Ser Ala Leu Leu Gln Thr Val Glu Glu Leu Arg
1175 1180 1185

Arg Arg Ser Ala Glu Pro Ser Asp Arg Glu Pro Glu Cys Thr Gln
1190 1195 1200

Pro Glu Pro Thr Gly Asp
1205